ICE5840 User's Guide

For
EM785840
EM785841
EM785842
EM78P5840
EM78P5841
EM78P5842

Version 2.1
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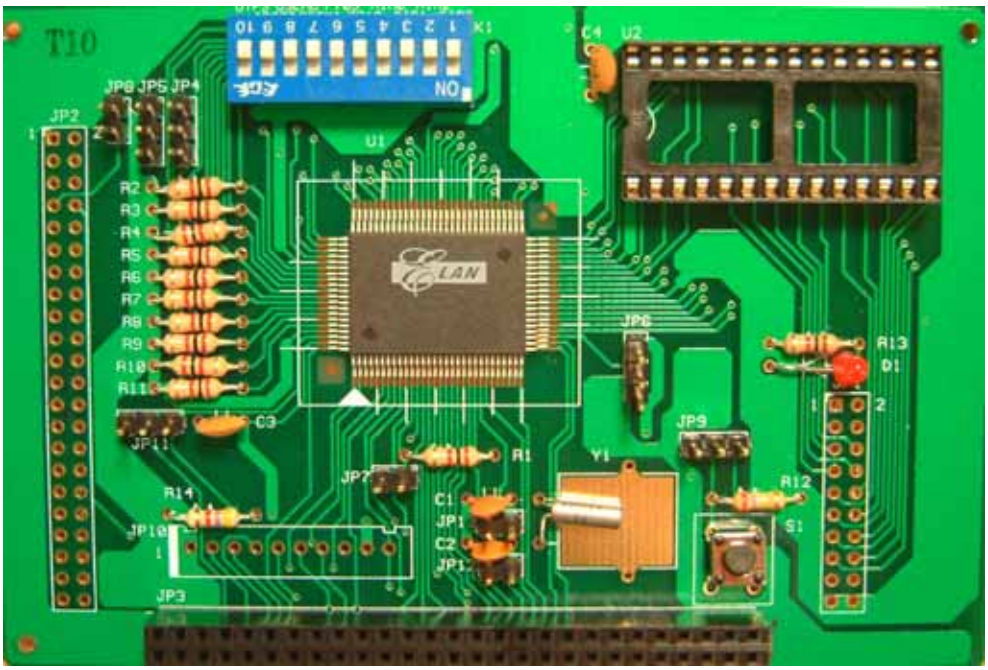
ELAN In Circuit Emulator

1 Introduction

ICE5840 is intended to provide the product development engineer a powerful microcontroller design tool.



2 Components description:

Table 1:

Symbol	Function	Description
U1	EM78R5840	EM78R5840 Romless IC
U2	27C256	8-bit data width DIP package memory (EPROM). It mimicked to 4K word (8K bytes) embedded Program ROM.
Y1	Oscillator	32.768KHz crystal.
S1	Reset button	Reset from /Reset pin.
K1	Option switch	Refer to Table 3,4,5.
JP1	ICE interface	Connect to GIC board
JP2	ICE interface	Connect to GIC board
JP3	Function pin	Connect to user application board, refer to Table6.
JP6	Program ROM select	Connect to VDD : GIC mode, emulate with PC. Don't connect U2 Connect to GND : External Rom mode, U2 as program Rom.
JP8	Program HOLD	Open : developing program on ICE. Short : Run on Piggyback.
JP9	P71/Reset	P71/Reset as reset pin or general reset.
JP11	P70/PLLC/ERCI	P70/PLLC as PLLC connect capacitance to GND. P70/PLLC as ERCI, connect resistance to VDD. Open: P70/PLLC as I/O port.
JP12	XIN/P61	Short: Xin/P61 as Oscillator pin. Open: Xin/P61 as I/O port.
JP13	XOUT/P60	Short: XOUT/P60 as Oscillator pin. Open: XOUT/P60 as I/O port.
R14	Resistance	Resistance for ERC
D1	LED	Indicates Power.

2.1 Power on the E8 ICE before executing the control software, or an error message due to lack of hardware will appear.

2.2 E8 - ICE uses the printer cable to communicate with host PC. If a user wants to use the Printer, it is recommended to install another printer port.

2.3 Printer port and the adapter locate on the right side. The ICE connects to personal computer by printer port. The adapter connects to the power. Be sure turn power off of ICE before plug in the adapter for avoiding over current which may be burn the chip off.

2.4 Power on switch located on the same side as printer port. By switching to turn off or turn on the ICE power.

2.5 On the top sight, we have some connections and one EM78R5840 Romless chip and some switches. The JP1 and the JP2 connect to the second layer of ICE for the code instruction accessing. The JP3 is more important for ICE user. They are the EM78R5840 control signals and I/O ports. ICE user can connect these connections to user's application board. The connections are list in Table1.

2.6 The U1 is EM78R5840 Romless chip. The U2 is a 4K words ROM for on board testing by piggyback. If user has developed application code by this ICE. User can use PIGGYBACK (user can buy from ELAN) to connect to user's application board with 4K word EPROM (27c128 ~ 27C512). To verify user's program.

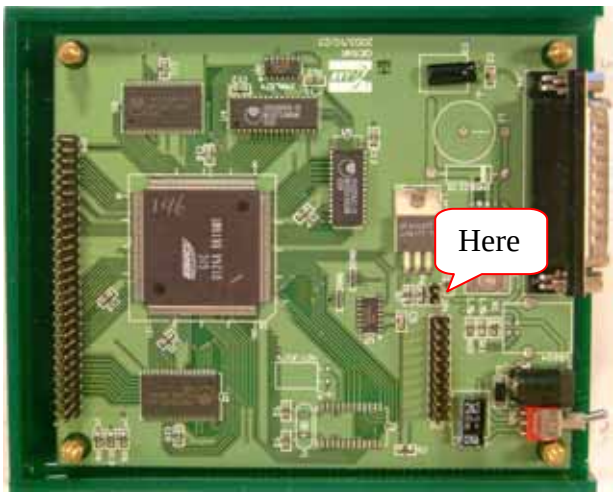
2.7 The D1 is a LED that indicates power is on or off.

2.8 Run WICE software to enter ICE environment.

2.9 User can use file “*.MIX” which generate by WICE for masking EPROM .

The *.mix file is a binary file and addressing from zero.

2.10 For different voltage system, user can select 5.0V or 3.6V.
The bottom layer of ICE (called GIC layer), JP1 selction:
Open : 3.6V
Short : 5.0V



3 Setting

3.1 ICE and Piggyback

Table 2:

	U2	JP1,JP2	JP4,JP5	JP6	JP7	JP8
ICE	No	Connect to GIC board	VDD (upward)	VDD (upward)	Open	Open
Piggyback	EPROM	No	VDD (upward)	GND (downward)	Open	Short

3.2 K1 define:

Table 3:

1	2	3	4	5	6	7	8	9	10
AIR3	AIR2	AIR1	AIR0	P71S	P70S	OSCM1	OSCM0	IRC2S	TEST

3.3 Crystal, ERC, IRC mode

Table 4:

Mode		K1				JP11	JP12	JP13
		6	7	8	10		P60	P61
Crystal mode	P70 used	ON	OFF	OFF	OFF	Open	Short	Short
	PLL used	OFF				Leftward		
ERC mode		NA	ON	OFF	OFF	Rightward	Open	Open
IRC mode		NA	ON	ON	OFF	Open	Open	Open

3.4 IRC frequency

3.4.1 IRC2S: Internal RC oscillating frequency (for system CLK) select.

Connect to GND ➔ 2M Hz

Connect to VDD ➔ 4M Hz

3.4.2 AIR0~AIR3: Oscillating frequency adjustor.

Table 5:

AIR3 ~ AIR0	Frequency
0000	1.05*F
0001	1.10*F
0010	1.15*F
0011	1.20*F
0100	1.25*F
0101	1.30*F
0110	1.35*F
0111	1.40*F
1000	0.65*F
1001	0.70*F
1010	0.75*F
1011	0.80*F
1100	0.85*F
1101	0.90*F
1110	0.95*F
1111	1.0*F

* ”F” means the frequency of IRC output.

3.5 P71/Reset pin

P71S (K1.5) : PORT71 function select bit:

K1.5 ON ➔ /RESET pin selected.

K1.5 OFF ➔ General purpose INPUT port “PORT71” selected.

	K1.5	JP9
Port71 as I/O	OFF	Leftward
Port71 as /Reset	ON	Rightward

4 I/O connection

	pin	Name	pin	Name	pin	Name	pin	name	pin	Name	pin	Name
JP3	1	VDD	11	P64	21	P76	31	P90	41	NC	51	NC
	2	GND	12	P65	22	NC	32	P91	42	NC	52	NC
	3	/Reset	13	NC	23	NC	33	P92	43	NC	53	NC
	4	GND	14	NC	24	NC	34	P93	44	NC	54	NC
	5	VCC	15	P70	25	NC	35	P94	45	NC		
	6	VCC	16	P71	26	NC	36	P95	46	NC		
	7	P60	17	NC	27	NC	37	P96	47	NC		
	8	P61	18	P73	28	NC	38	P97	48	PC1		
	9	P62	19	P74	29	NC	39	NC	49	PC2		
	10	P63	20	P75	30	NC	40	NC	50	NC		